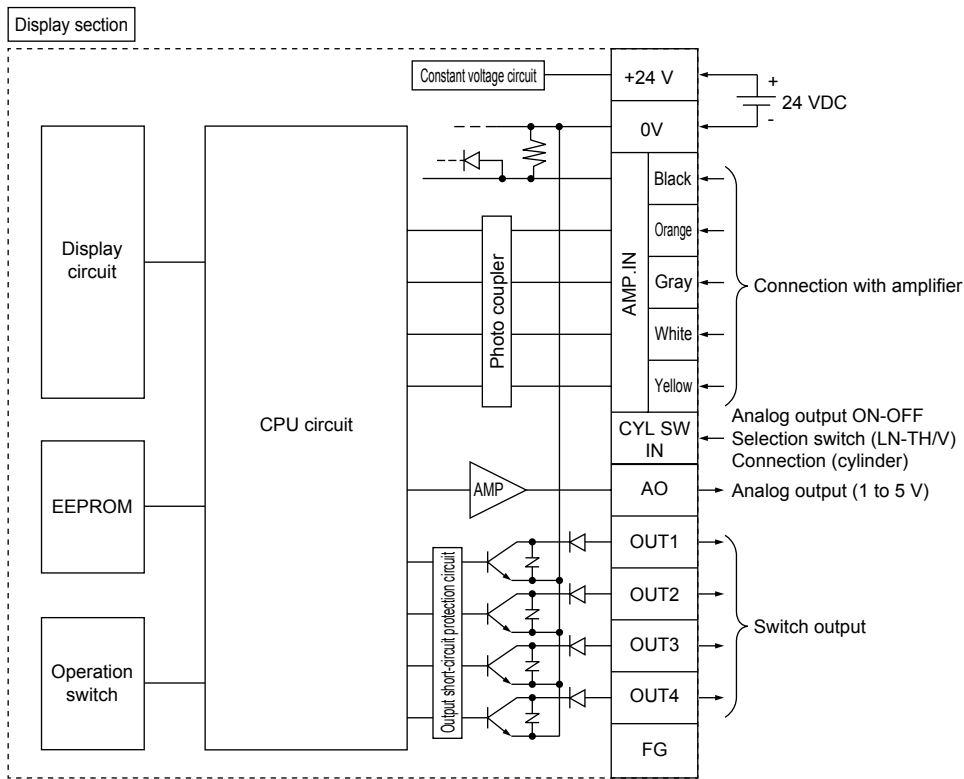


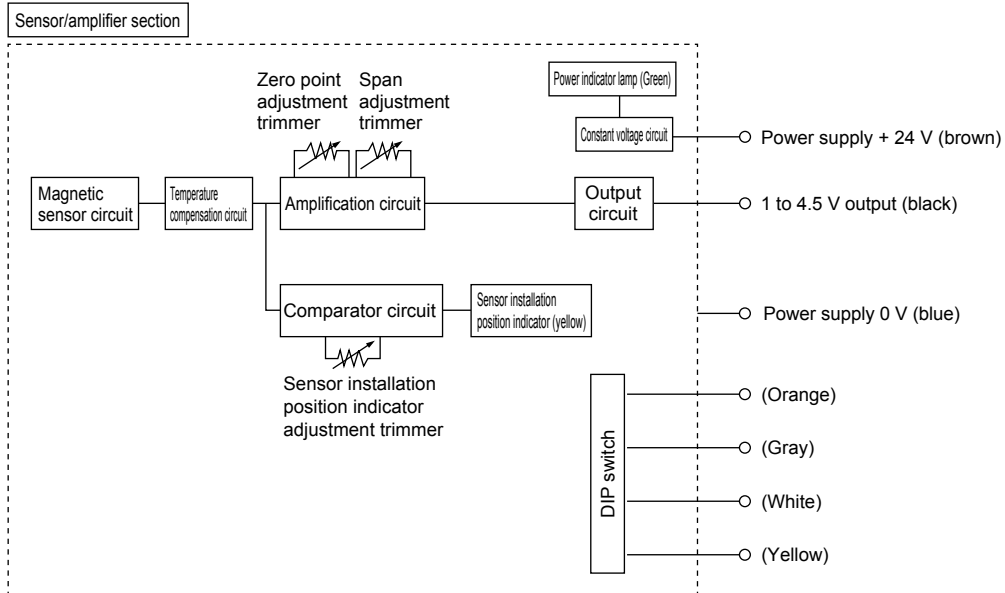
LCM
LCR
LCG
LCW
LCX
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
UB
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCS2
RCC2
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HRL
LN
Hand
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending

Internal circuit diagram

● Display

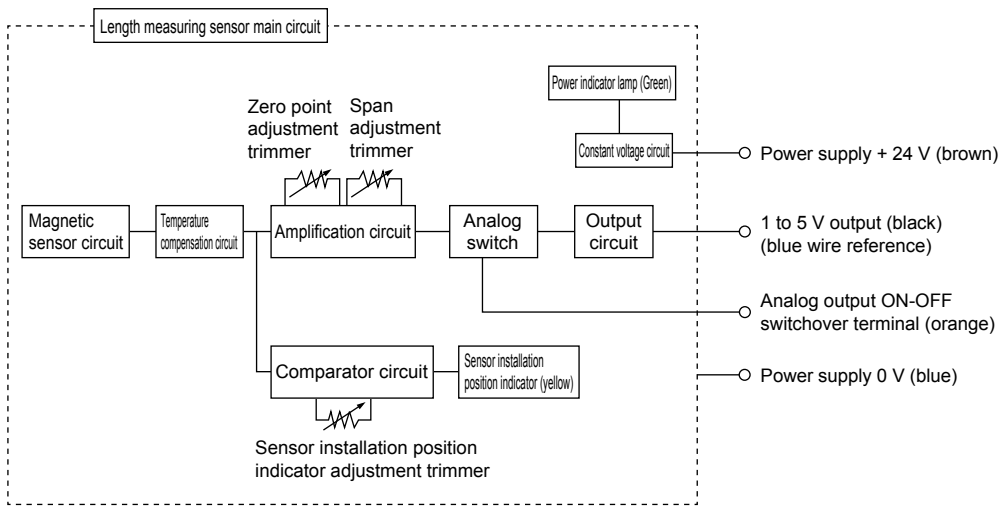


● Output stage transistor ON/OFF during piston detection can be selected with the operation switch.

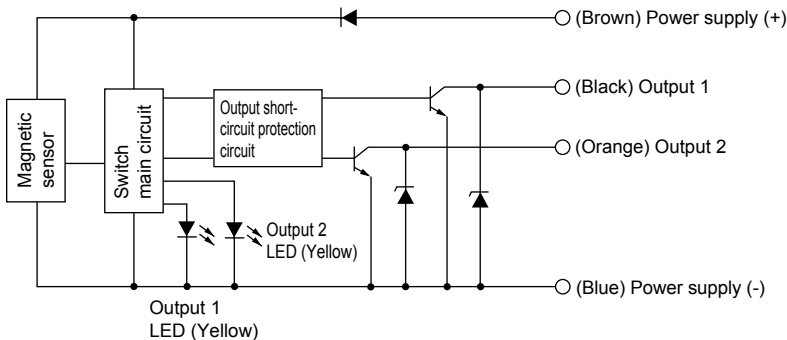


Internal circuit diagram

● Analog output

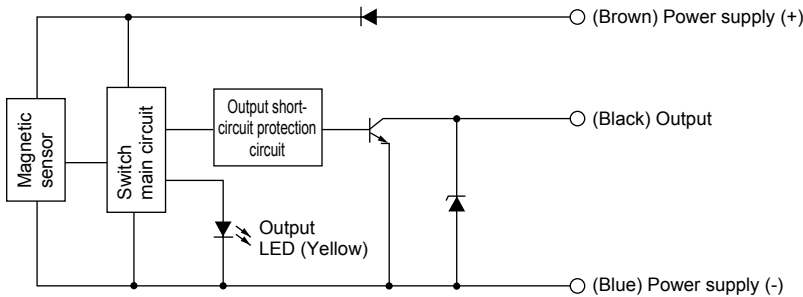


● Switch output, amplifier separated



● The output step transistor is turned ON during piston detection.

● Switch output, amplifier mounting



● The output step transistor is turned ON during piston detection.

LCM
LCR
LCG
LCW
LCX
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
UB
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCS2
RCC2
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HRL
LN
Hand
Chuk
MechHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending

LCM
LCR
LCG
LCW
LCX
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
USC3/USC4
USSD
UFCD
USC
UB
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCS2
RCC2
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HRL
LN
Hand
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending

When analog output cylinder is installed

When adjusting the sensor installation position or analog output voltage, a workpiece (reference) should be provided so that the piston stops 4 mm from the protruding end and from the retracting end, with the measured range length center and alignment center as reference. Air pressure should be the same as for actual working conditions when making these adjustments.

1 Sensor mounting position adjustment method

At shipment, the sensor is installed within the specified measured range length (example: set to the center if the range is from 8 mm before piston protruding end to protruding end). Follow the following procedures to adjust the position if the sensor installation position has been changed or the measured range length has been changed.

- (1) With the sensor removed, move the sensor installation position indicator lamp adjustment trimmer so the sensor installation position indicator (yellow LED) turns ON. Set the trimmer to the center of the interval at which the yellow LED turns ON. (As this is adjusted before the product is shipped, implement even if the trimmer has been moved inadvertently.)
- (2) Move the cylinder piston to the center of the measured length range.
- (3) Install the sensor on the cylinder. Fix the sensor in a position allowing the following operations in the direction of insertion. Sensor tightening torque is 0.1 to 0.2 N·m. Install the sensor case so the sensor set screw (M2.5 slotted set screw) faces the cylinder head side.

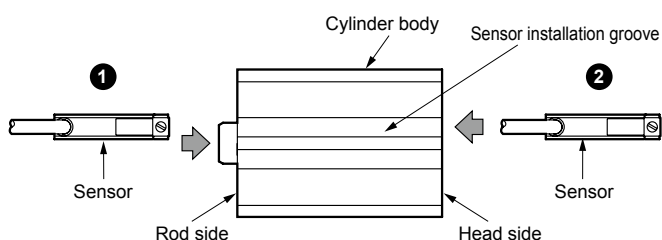
① Insertion from rod side

Fix at the center of the second lighting interval, including where the sensor mounting position indicator turns ON at (1). (Lights for the second time at a short interval equivalent to approx. 1 mm of piston stroke)

② Insertion from head side

Fix at the center of the second lighting interval, including where the sensor mounting position indicator turns ON at (1). (Lights for the second time at a short interval equivalent to approx. 1 mm of piston stroke)

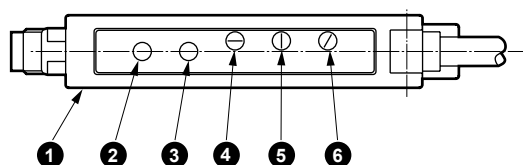
- (4) When the piston stroke of the cylinder on which the sensor is installed is longer than 8 mm, and the length is measured within an 8 mm stroke range of that stroke, connect a cylinder switch T0H/V across the orange and blue wires so that unnecessary analog output voltages are not output outside the measured range length. (When the stroke length is 8 mm or less, it will be short-circuited across the orange and blue wires.) As with the conventional cylinder switch, perform step (2) above, and then position this switch between ON points. The tightening torque of the switch is 0.1 to 0.2 N·m.



2 Analog output voltage adjustment method

The analog output voltage is output at 8 mm in front of the piston protruding end, for example, if the specified measured range length is adjusted to 5 V at 8 mm in front of the protruding end and 1 V at the protruding end. However, the voltage may vary slightly due to the working environment (affected by magnets in the area), so perform fine adjustments with the following procedure.

- (1) Connect the brown output stage lead to the (+) side of the 24 VDC stabilized power, the orange lead to the brown wire for cylinder switch T0H/V, and both blue wires to the (-) side of the power supply.
- (2) Connect the black wire to the (+) side of the voltmeter and the blue wire to the (-) side of the voltmeter.
- (3) Move the cylinder piston, and read the voltage value at the length measuring range start (example: 8 mm in front of projecting end) and end (example: projecting end).
- (4) If the voltage difference in (2) is 4 V or less, turn the span adjustment trimmer slightly clockwise. At 4 V or more, move the trimmer slightly counterclockwise.
- (5) Move the cylinder piston again, and read the voltage at the start and end of the length measuring range. Adjust the zero point adjustment trimmer so the reading is 5 V with the start as a reference, and 1 V when using the end as a reference.
- (6) Repeat steps (3), (4) and (5) several times, and perform fine adjustments.



- 1 Amplifier unit case
- 2 Power indicator lamp
- 3 Sensor installation position indicator
- 4 Sensor installation position indicator adjustment trimmer
- 5 Zero point adjustment trimmer
- 6 Span adjustment trimmer

When analog output hand is installed

1 Sensor mounting position adjustment method

Before shipment, the sensor is installed at the center of the stroke for both fingers (jaws). Follow the following procedures to adjust the position if the sensor installation position has been changed or the hand has been replaced.

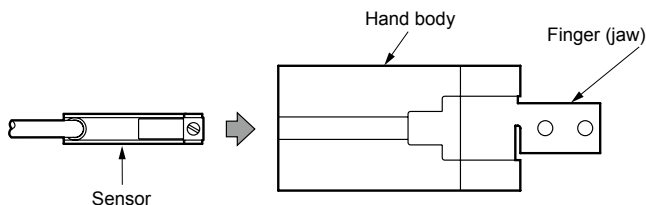
(1) With the sensor removed, move the sensor installation position indicator lamp adjustment trimmer so the sensor installation position indicator (yellow LED) turns ON. Set the trimmer to the center of the interval at which the yellow LED turns ON. (As this is adjusted before the product is shipped, implement even if the trimmer has been moved inadvertently.)

(2) Move the hand finger (jaw) to the center of the stroke.

(3) Install the sensor on the hand. Fix the sensor in a position allowing the following operations. Sensor tightening torque is 0.1 to 0.2 N·m. Install the sensor case so the sensor installation screw (M2.5 slotted set screw) faces the finger (jaw).

① Sensor installation position

Fix at the center of the second lighting interval, including where the sensor mounting position indicator turns ON at (1). (Lights for the second time at a short interval equivalent to approx. 1 mm of piston stroke)



2 Analog output voltage adjustment method

The analog output voltage is adjusted so the finger (jaw) full stroke is 5 V when open and 1 V when closed. However, the voltage may slightly vary due to the working environment (affected by magnetic bodies in the area), so adjust finely with the following procedures.

(1) Connect the brown wire to the (+) side of the 24 VDC stabilized power, and the blue and orange wires to the (-) side.

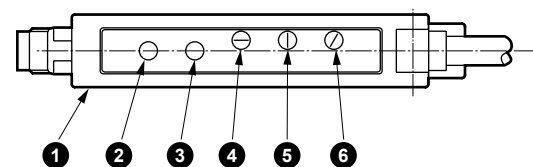
(2) Connect the black wire to the (+) side of the voltmeter and the blue wire to the (-) side of the voltmeter.

(3) Move the finger, and read the voltage value when open and closed.

(4) If the voltage difference in (3) is 4 V or less, turn the span adjustment trimmer slightly clockwise. At 4 V or more, move the trimmer slightly counterclockwise.

(5) Move the finger again, and read voltage when open and closed. Adjust the zero point adjustment trimmer so the reading is 5 V with the open state as a reference, and 1 V with the closed state as a reference.

(6) Repeat steps (3), (4) and (5) several times, and perform fine adjustments.



- 1 Amplifier unit case
- 2 Power indicator lamp
- 3 Sensor installation position indicator
- 4 Sensor installation position indicator adjustment trimmer
- 5 Zero point adjustment trimmer
- 6 Span adjustment trimmer

LCM
LCR
LCG
LCW
LCX
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
UB
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCS2
RCC2
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HRL
LN
Hand
Chuk
MechHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending

LCM
LCR
LCG
LCW
LCX
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
UB
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCS2
RCC2
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HRL
LN
Hand
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending

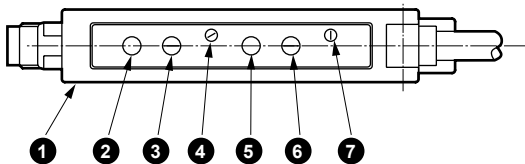
Switch output

1 Sensor mounting position adjustment method

Before shipment, the sensor is installed at the center of the stroke for both fingers (jaws). Follow the following procedures to adjust the position if the sensor installation position has been changed or the hand has been replaced.

- (1) Align the red lines on the sensor and hand, and tighten with a sensor tightening torque of 0.1 to 0.2 N·m.
- (2) Be sure to install the sensor so the set screw (M2.5 slotted set screw) faces the finger (jaw).

Amplifier separated

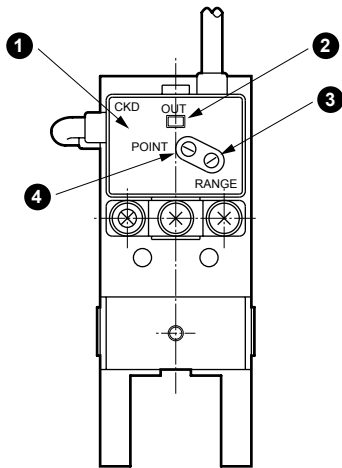


- 1 Amplifier unit case
- 2 Output 1 indicator lamp
- 3 Output 1 operating range adjustment trimmer
- 4 Output 1 operating point adjustment trimmer
- 5 Output 2 indicator lamp
- 6 Output 2 operating range adjustment trimmer
- 7 Output 2 operating point adjustment trimmer

2 Setting the switch output position

- (1) Move the hand's finger (jaw) to the position for switch output.
- (2) Turn the operating range adjustment trimmer a half turn clockwise, and then turn slightly clockwise and set it temporarily.
- (3) Move the operating point adjustment trimmer and turn output ON. Set the trimmer at the center of the ON interval.
- (4) Move the operating range adjustment trimmer, and determine the operating range. The operating range is increased or decreased using the approximate center of the operating points as reference.
- (5) Move the finger (jaw) several times and turn the switch output ON and OFF. Repeat steps (3) and (4) and perform fine adjustments.

Amplifier mounting



- 1 Amplifier unit case
- 2 Output indicator lamp
- 3 Output operating range adjustment trimmer
- 4 Output operating points adjustment trimmer

* Refer to the handling precautions attached with the product for details on adjusting and setting the display.